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STUDY OF RISK OF MALIGNANCY INDEX SCORING SYSTEM IN THE PREOPERATIVE EVALUATION OF PATIENTS WITH OVARIAN TUMOR AND ITS CORRELATION WITH HISTOPATHOLOGICAL EXAMINATION

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KEYWORDS

INTRODUCTION

Ovarian malignancy is the second most common genital cancer and it constitutes about 15 to 20% of genital malignancy. The peak incidence of ovarian malignancy is about 50 to 60 years. The lifetime risk for developing ovarian cancer is 1:17 to 1:100 and from dying is about 0.5%.It is the fifth most common cause of death from cancer in women.

The annual incidence of ovarian cancer is 5.6 per 1,00,000 and the death rate is about 2.6 per 1,00,000.The purpose of the present study was to validate the efficiency of risk of malignancy index scoring system in differentiating benign and malignant ovarian masses. Then the risk of malignancy index scoring pattern is finally compared with the histopathological findings which were obtained postoperatively.

AIM

Study of risk of malignancy index scoring system in the preoperative evaluation of patients with ovarian tumour and its correlation with histopathological examination

MATERIALS AND METHODS

This study was conducted in the Govt. R.S.R.M Lying in hospital, Stanley medical college, Chennai during the period of 2015 to 2016.

TYPE OF STUDY: Prospective observational study

INCLUSION CRITERIA:

Patients of all age groups who was admitted in our hospital with The diagnosis of ovarian tumour.

EXCLUSION CRITERIA:

1. Pregnancy
2. Endometriosis
3. Fibroid uterus
4. Pelvic inflammatory disease
5. Peritoneal dialysis

All statistical analysis for this study was achieved by using the software SPSS version 20.0. By using the chi square test, the study data were analysed. The student t test was used for univariate analysis. Group statistics were used for demographic data and given as mean with SD or frequency with percentage. The predictive power of each factor was assessed by using receiver operating characteristic curve. The ROC curves of RMI and CA125 were constructed to determine the cut off value in differentiating the benign lesion and malignant lesion.

Table - 1 OBSERVATION AND RESULTS HISTOPATHOLOGY

Histopathology	Number of patients	Percentage
Benign	77	77%
Malignant	23	23%

Table - 2 BENIGN TUMORS

S No	Histopathology	Number of patients	Percentage of benign tumors	Total (%)
1	Dermoid	19	24.7	19
2	Simple serous cyst	11	14.3	11
3	Follicular cyst	3	3.9	3
4	Corpus luteal cyst	2	2.6	2
5	Serous cystadenoma	24	31.2	24
6	Mucinous cystadenoma	17	22.1	17
7	Fibrothecoma	1	1.3	1

MALIGNANT TUMORS Table - 3

S No	Histopathology	No of patients	% of malignant tumors	Total (%)
1	Papillary serous cystadenocarcinoma	6	26.1	6
2	Serous cystadenocarcinoma	5	21.7	5
3	Mucinous cystadenocarcinoma	3	13.0	3
4	Endometrioid carcinoma	3	13.0	3
5	Granulosa cell tumour	2	8.7	2
6	Clear cell tumour	1	4.3	1
7	Atypical proliferative sero mucinous tumour	1	4.3	1
8	Krukenberg tumour	1	4.3	1
9	Dysgerminoma	1	4.3	1

AGE DISTRIBUTION Table – 4

Age in Years	Benign n (%)	Malignant n (%)	Total n (%)	P Value
11 – 20	4 (80%)	1 (20%)	5 (5%)	<0.001*
21 – 30	20 (100%)	0 (0%)	20 (20%)	
31 – 40	33 (94.3%)	2 (5.7%)	35 (35%)	
41 – 50	14 (60.9%)	9 (39.1%)	23 (23%)	
51 – 60	4 (33.3%)	8 (66.7%)	12 (12%)	
> 60	2 (40%)	3 (60%)	5 (5%)	

MENSTRUAL HISTORY Table – 5

Menstrual Pattern	Benign n (%)	Malignant n (%)	Total n (%)	P Value
Regular	54 (93.1%)	4 (6.9%)	58 (58%)	<0.001**
Irregular	16 (84.2%)	3 (15.8%)	19 (19%)	
Menopausal	7 (30.4%)	16 (69.6%)	23 (23%)	

MENOPAUSAL SCORE Table – 6

Menopausal Score	Benign n (%)	Malignant n (%)	Total n (%)	P Value
Score 1	73 (93.6%)	5 (6.4%)	78 (78%)	<0.001**
Score 3	4 (18.2%)	18 (81.8%)	22 (22%)	

ULTRASOUND SCORE Table – 7

Ultrasound Score	Benign n (%)	Malignant n (%)	Total n (%)	P Value
Score 1	53 (85.5%)	9 (14.5%)	62 (62%)	<0.001**
Score 3	24 (63.2%)	14 (36.8%)	38 (38%)	

SERUM CA125 LEVEL Table – 8

CA125	Benign n (%)	Malignant n (%)	Total n (%)	P Value
< 35 U/ml	48 (96%)	2 (4%)	50 (50%)	<0.001**
> 35 U/ml	29 (58%)	21 (42%)	50 (50%)	

DISCUSSION

This prospective observational study was conducted in our hospital with 100 patients who admitted with the diagnosis of ovarian tumour. Out of these 77 patients were benign tumors and 23 patients were malignant tumors. About 20% of the malignancy was reported in the age group of 11 to 20 years.66.7% of the malignancy in 51 to 60 years and 60% in the age group of above 60 years .In the study the maximum number of malignancy were reported in the age group of 51 to 60 years. Among the benign tumors in the study, 94.3% were in the age group of 31 to 40 years. According to this malignancy risk increases in extremes of age. By comparing the menstrual pattern in regarding regular cycles, irregular cycles and menopausal status concluded that the chance of malignancy risk has high in irregular pattern of cycles. More than half of the malignant tumour in the study belongs to postmenopausal group which constitutes 69.6%.

The association of the parity in the ovarian tumour is inversely related. Infertility increases the risk of malignancy. Nearly half of the patients in the nulliparous group in our study were malignant which constitutes 44.4%. Most of the tumors in the multiparous group were benign which accounts for 78.3%. According to the menopausal status in the study, 88.8% of malignancy reported in postmenopausal group and 6.4% in the premenopausal group. The sensitivity, specificity, positive predictive value and negative predictive value for the ultrasound score in this study was 60.9%, 68.8%, 36.8% and 85.5% respectively. The study showed that the sensitivity, specificity, positive predictive value and negative predictive value were 87%, 67%, 41% and 95%.

Tumour marker CA 125 is used as a screening test in diagnosing ovarian tumour but the sensitivity is low. By using the cut off value of 35U/ml, the study showed

True positive- 21 patients (42%)
False positive-29 patients (58%)
True negative- 48 patients (96%)
False negative-2 patients (4%)

The false positive cases which constitute 58%, out of these 17 cases were serous cystadenoma, 9 cases were mucinous cystadenoma and 3 cases were simple serous cyst.

The false negative cases accounts for 4%, out of 2 cases one was mucinous cystadenocarcinoma and other was Granulosa cell tumour. In our study the range of CA 125 has 9.87 to 902.1 U/ml.

According to the Rachmasari et al ,conducted the study by using the cut off value of 35U/ml the sensitivity, specificity, positive predictive value and negative predictive value was 81%, 60%, 88% and 48% respectively.

According to our study, the sensitivity, specificity, positive predictive value and negative predictive value of CA 125 with the cut off value of 35U/ml was 91.3% ,62.3%, 42% and 96% respectively .The specificity was low and the negative predictive value was high. The CA 125 level found to be high in this study were papillary serous cystadenocarcinoma and serous cystadenocarcinoma.

By using the RMI cut off value 200, among the 100 patients 77 patients were benign lesion and 23 patients were malignant lesion. With the cut off value of 200,

True positive-19 patients (82.6%)
False positive-4 patients (17.4%)
True negative-73 patients (94.8%)
False negative-4 patients (5.2%)

Among the false negative cases, 2 cases were mucinous cystadenocarcinoma, one had krukenberg tumour and other was Granulosa cell tumour.

In the false positive cases, 17.4% had benign tumors out of these 3 had serous cystadenoma and one had mucinous cystadenoma. The commonest cause in regard of false negative was mucinous cystadenocarcinoma and serous cystadenoma for false positive in this study.

The range of RMI in the benign lesion had 9.87 to 264.3 and the mean value was 53.05+/-53.10.In the malignant lesion, RMI had the range of 74.1 to 8118.9 and mean of this was 2163.87+/-2193.71.

In this study, comparison of RMI were done at various cut off values 100,150,200 and 250 respectively in respect to sensitivity, specificity, positive predictive value and negative predictive value. The high sensitivity (91.3%) and negative predictive value (97.1%) was found at the cut off value of RMI 100.The high specificity (97.4%) and positive predictive value (89.5%) at the RMI cut off value of 250. Once the cut off value of RMI increases, the specificity increases and sensitivity decreases.

Finally in our study concluded that the diagnostic performance of RMI at the cut off value of 200 had the sensitivity, specificity, positive predictive value and negative predictive value of 82.6%, 94.8%, 82.6% and 94.8% respectively with statistically highly significant.

CONCLUSION

During preoperative evaluation of patients with ovarian tumour, risk of malignancy index scoring system is considered as a useful method for discriminating the benign and malignant ovarian tumour.

RMI was calculated with standard formula for all patients in this study.

$RMI = U \times M \times CA\ 125$

Risk of malignancy index scoring system is a better diagnostic tool in selection of appropriate patient those who need referral to higher centres for further management.

By comparing the performance with the individual parameters like CA 125, menopausal score and ultrasound score, risk of malignancy index has a high specificity in diagnosing the benign and malignant ovarian tumour. It has also role in deciding the appropriate mode of management according to the tumour status like conservative, laparoscopic method or laparotomy. In our study, the best optimal cut off value for risk of malignancy index in differentiating benign and malignant ovarian tumour is found to be 200.

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